

## APPARATUS AND METHOD FOR KEEPING AGGREGATED PORTIONS OF MULTIPLE WEB SITES SIMULTANEOUSLY DISPLAYED AND UPDATED

### FIELD OF THE INVENTION

The present invention relates to a method and apparatus for selecting information units from one or more web sites and simultaneously displaying and updating the selected information units.

### BACKGROUND OF THE INVENTION

As the amount of information that can be accessed from a computer via the Internet increases, new and useful ways to display that information are needed. A wide variety of pre-existing means for displaying data are available. A Graphical User Interface (GUI) is a visual computer environment that represents programs, files and options with graphical images, such as icons, menus, and dialog boxes on the screen. A user can select and activate these options by pointing and clicking with a mouse or with a keyboard. GUI provides standard software routines so that a particular item such as a scroll bar works the same way to the user in all applications.

While GUI simplifies moving through data, the user's reach is greatly extended by the ability of one computer to connect to one or more additional computers. The Internet is a wide area network connecting thousands of disparate networks in industry, education, government and research. The Internet uses the Transmission Control Protocol/ Internet Protocol (TCP/IP) as the

standard for transmitting information. An intranet is a network of organizational networks that run TCP/IP protocols and where the organizational networks are internal to a single organization. An intranet may be connected to the Internet.

The Transmission Control Protocol (TCP) is the protocol within TCP/IP that governs the breakup of data messages into packets to be sent via IP. The total set of interlinked hypertext documents residing on Hypertext Transfer Protocol (HTTP) servers all around the world is called the World Wide Web. HTTP is the protocol used to carry requests from a browser to a Web server and to transport pages back to the requesting browser.

Documents on the World Wide Web, called Web pages, are written in Hypertext Markup Language (HTML). HTML is an application of Standardized Generalized Markup Language (SGML) that uses tags to mark elements, such as text and graphics, in a document to indicate how Web browsers should display these elements to the user and should react to user actions such as activation of an element by means of a key press or mouse click. Web pages are identified by URL (Uniform Resource Locators) that specify the particular machine and pathname by which a file can be accessed. These files are transmitted from server to end user under the Hypertext Transfer Protocol (HTTP). Codes, called tags, embedded in an HTML document associate particular words and images in the document with URLs so that a user can access another file, which may be halfway around the word, at the press of a key or the click of a mouse.

Web pages are located by Web browsers. A Web browser is software that lets a user view HTML documents and access files and software related to these documents. Web browsers can provide access to documents on a network, an intranet, or the local hard drive. Navigation in Web browser software is based on hyperlinks which allow users to point and click with a mouse in order

to jump from document to document in whatever order they desire.

Web browsers display acquired data on Web pages and frames. IN HTML, a frame refers to a rectangular section displayed by a Web browser that appears like a somewhat separate document from the rest of the page. In other words, the browser display can be divided into separate sections, each of which appears like a different web page.

5 As used herein, "aggregating information" means collection of desired information by a user by collecting and correlating the desired information at the user's computer. One current method of aggregating information is through the use of Common Gateway Interface (CGI) scripts. CGI is the specification that defines communications between information servers (such as HTTP servers) and resources on the server's host computer, such as databases and other programs. The CGI script is an external application that is executed by an HTTP server machine in response to a request by a client, such as a Web browser. The CGI may be invoked by a user clicking on an element in a Web page, such as a link or an image. Communication between the CGI script and the server is carried out via the CGI specification. CGI scripts can be written in many programming languages and can also be batch programs or compiled programs. CGI scripts are used to provide interactivity in a Web page. Active X controls and Java applets can provide similar functionality to CGI scripts though through different means. By writing specialized CGI scripts information can be aggregated.

Another method of aggregating information is through a portal. A portal is a collection of links, content and services designed to guide users to information they are likely to find interesting. For example, the type of information to which a user may be guided may be news, weather or stock quotations.

Another method of aggregating information is through "Push" technology. "Push"

technology, developed in relation to the World Wide Web, is designed to provide end users with personalized Web access by having a site actively “push” requested information to the user’s desktop, either automatically or at specified intervals. In other words, the user is relieved of the step of actively retrieving or “pulling” information from the Web.

Aggregating information by the user takes place at the user’s desktop computer. The methods of aggregating information discussed above usually take place at the server computer and not at the client computer. In most cases, applying the above methods requires special programs that have to be written in some type of scripting or programming language or via specially designed web pages. What is needed beyond the prior art is a method to aggregate information in accordance with a user’s need without the need for special programming by the user. For example, users may want to have access to web sites that display information that is updated continuously or periodically, such as bank balances, stock prices or weather reports. A user may have a number of web sites to access to review desired current information and it would be desirable to consolidate portions of each web site onto one page so that only relevant information is shown.

What is needed beyond the prior art is a way for a user to look at relevant information from several web pages at the same time. Specifically, what is needed is the ability to create a composite web page that combines selected information from multiple web pages for viewing on a single page. In addition, what is needed is a composite web page in which the composite entries will all update in response to a periodic, manual or continuous refresh capability.

## SUMMARY OF THE INVENTION

The invention meeting the needs identified above is a method for identifying information units containing information capable of periodic, continuous or manual update, positioning the identified information units over a canvas page so that only the selected portions are visible. The information units are identified by enclosing a desired information item by a continuous line so that only the information within the enclosed line remains visible and the remainder of the web page, i.e. the portion outside of the enclosed line becomes transparent. The information units can be updated continuously, periodically or manually depending on the capability of the underlying web site.

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 depicts a computer network in which the invention can be implemented;

Fig. 2 depicts a computer in which the invention can be implemented;

Fig. 3A depicts a first web page from which a first information unit is identified;

Fig. 3B depicts a second web page from which a second information unit is identified;

Fig. 3C depicts a canvas web page upon which the first information unit and second information unit are positioned to form a composite web page;

Fig. 4 depicts an alternate canvas web page with a split screen canvas and a split screen work area;

Fig. 5 depicts formation of a composite web site on the alternate canvas web page;

Fig. 6 depicts a flow chart for the formation of a composite web site; and

Fig. 7 depicts a flow chart for the selection of the manner of refreshing the information units in the composite web page.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

5 <sup>Sub A1</sup> Figure 1 depicts a pictorial representation of a distributed data processing system in which the present invention may be implemented and is intended as an example, and not as an architectural limitation, for the processes of the present invention. Distributed data processing system **100** is a network of computers which contains a network **102**, which is the medium used to provide communications links between various devices and computers connected together within distributed data processing system **100**. By way of example, network **102**, has five computers connected by network **102**. First computer **104**, second computer **106**, third computer **108**, fourth computer **110** and fifth computer **112** are shown as part of network **102**. Network **102** may include permanent connections, such as wire or fiber optic cables, or temporary connections made through telephone connections. personal computers or network computers.

15 Distributed data processing system **100** may include additional servers, clients, and other devices not shown. In the depicted example, distributed data processing system **100** is the Internet with network **102** representing a worldwide collection of networks and gateways that use the TCP/IP suite of protocols to communicate with one another. Distributed data processing system **100** may also be implemented as a number of different types of networks, such as for example, an  
20 intranet, a local area network (LAN), or a wide area network (WAN).

<sup>Sub A2</sup> Figure 2 depicts computer **200**. Although the depicted embodiment involves a personal

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5 computer, a preferred embodiment of the present invention may be implemented in other types of data processing systems. An exemplary hardware arrangement for computer 200 follows. Keyboard 222 and display 223 are connected to system bus 210. Read only memory (ROM) 230 contains, typically, boot strap routines and a Basic Input/Output System (BIOS) utilized to initialize Central Processing Unit (CPU) 220 at start up. Random Access Memory (RAM) 240 represents the main memory utilized for processing data. Drive controller 250 interfaces one or more disk type drives such as floppy disk drive 252, CD ROM 254 and hard disk drive 256. The number and type of drives utilized with a particular system will vary depending upon user requirements. A network interface 260 permits communications to be sent and received from a network. Communications port 270 may be utilized for a dial up connection to one or more networks while network interface 260 is a dedicated interface to a particular network. Programs for controlling the apparatus shown in Fig. 2 are typically stored on a disk drive and then loaded into RAM for execution during the start-up of the computer.

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Figure 3A through 3C shows the creation of a Composite Web Page (COMPWP) by positioning Information Units (IUs) on a Canvas Web Page (CWP). As used herein an Information Unit (IU) means a portion of a web page that (1) contains an item of information, (2) that has been defined by having a border outlined around the item of information by a cursor, stylus, light pen or touch by the user, and (3) that the remainder of the web page outside the defined boundary of the information unit has been rendered transparent. As used herein, the term information item means data that is displayed on the web page either statically, so that the data remains constant, or dynamically, so that the data is updated automatically or manually. Automatic updating is accomplished by the host web page. Manually updating is accomplished by a host selection device

on the host web page that may be linked to an update selection device on the COMPWP such as a refresh button. As used herein, rendering transparent means that the area rendered transparent is clear and can be seen through. In other words, when a portion of a web page is rendered transparent, no part of the original web page can be seen in the area of the web page that has been rendered transparent. When the area surrounding an information unit is rendered transparent, the pixels of the area rendered transparent are stored in memory but are not displayed on the screen. Therefore, an IU is a web page in which all but the relevant portion has been rendered transparent and which web page may be positioned over a Canvas Web Page (CWP). As used herein a CWP is a blank web page upon which IUs may be displayed. A CWP does not need to be a special blank web page. The first web page on which an IU is identified and the remainder of the web page rendered transparent can serve as a CWP with all of the CWP area available except the area where the IU is located. The advantage of starting with a CWP that is a blank page is that various backgrounds may be selected and the positioning of IUs is somewhat easier because the user is not positioning around the first IU. The color or design of the CWP will appear to the viewer through the transparent portions of the IUs. Successive IUs may be positioned one over the other so that the relevant portions within the defined areas which have not been rendered transparent will be visible atop the CWP. A set of IUs that have been positioned atop a CWP will create a Composite Web Page (COMPWP) in which all of the stacked web pages continue to function in their ability to update information but only the selected portions are visible in the COMPWP. The CWP may have a refresh button so that when the COMPWP is established, those IUs requiring manual update may be updated simultaneously by invoking a "refresh" button.

Figure 3A shows first web page 310 having a first web page first item 312 and a first web



page second item **314**. First web page **310** is positioned above Canvas Web Page (CWP) **330**. CWP **330** is not visible in Figure 3A. First web page first item **312** has first web page first item content **318** which are the words "Bank Logo" which are meant to represent an image showing the bank logo. First web page second item **314** has first web page second item content **320** which is a bank balance which is a item that is updated periodically. Alternatively, first web page second item content **320** could be updated continuously or manually by invoking an update icon. The relevant information in first web page **310** to the user is the bank balance, i.e. first web page second item content **320**. First web page second item boundary **316** has been created by the user by moving the cursor around first web page second item **314** from an initial position in a continuous line until the cursor returns to the initial position. The initial position may be any point along boundary **316**. When first web page second item boundary **316** is complete, the user will execute a "make transparent" command. Execution may be accomplished by right clicking the mouse or by invoking a "make transparent" icon, or by selecting a "make transparent" command from a drop down menu. Upon execution of the "make transparent" command, all points of first web page **310** which reside outside of the first web page second item boundary **316** are made transparent and an information unit is created. First information unit **322** consists of first web page second item boundary **316**, first web page second item **314**, first web page second item content **320** and first web page transparent remainder **324**. Once the command "make transparent" is invoked, first web page transparent remainder **324** is not visible and CWP **332** will be visible (see Fig. 3C).

Figure 3B depicts second web page **320** having second web page first item **322** and second web page second item **332**. Second web page first item **322** has second web page first item content **328** which is the logo "Austin News." Second web page second item **324** has second web page

second item content **324** which is a satellite map picture which is periodically updated. Alternatively, the satellite map picture could be updated manually or continuously and the degree of updating would depend on the originator of the second web page **320**. The relevant information in second web page **320** to the user is the satellite map, i.e. second web page second item content **324**. Second web page second item boundary **326** has been created by the user by moving the cursor around second web page second item **324** from an initial position in a continuous line until the cursor returns to the initial position. The initial position may be any point along boundary **326**. When second web page second item boundary **326** is complete, the user will execute a "make transparent" command. Execution may be accomplished by right clicking the mouse or by invoking a "make transparent" icon or by selecting a "make transparent" command from a drop down menu. Upon execution of the "make transparent" command, all points of second web page **320** which reside outside of the first web page second item boundary **326** are made transparent and an information unit is created. Second information unit **332** consists of second web page second item boundary **326**, second web page second item **324**, second web page second item content **330** and second web page transparent remainder **334**. Once the command "make transparent" is invoked, second web page transparent remainder **334** is no longer visible and CWP **332** will be seen (see Fig. 3C). In addition, first information unit **322** will be visible through second web page transparent remainder **334**.

Sub A4 Fig. 3C depicts COMPWP **360**. COMPWP **360** has CWP **330**, first information unit **322**, second information unit **332**, refresh button **342** and Composite Page button **350**. Referring to Fig. 3A and Fig. 3b, it can be seen that first information unit **322** and second information unit **332** are located in approximately the same area of their respective web pages. Therefore, second information unit **332** would block out all or part of first information unit **322**. The user must therefore, move

second web page 320 downward on the screen so that second information unit 332 will be positioned beneath first information unit 322. This may be done by dragging second information unit 332 into position. Dragging second information unit 332 which will have the same effect as moving second web page 330 because transparent second web remainder 334 will move along with second information unit 332. When first information unit 322 and second information unit 332 are positioned in the location desired by the user, the user effects the formation COMPWP 360 by clicking on "Composite Page" icon 350 and COMPWP 360 will be saved. COMPWP 360 may be bookmarked for access. When COMPWP 360 is accessed first information unit 322 and second information unit 332 may be updated by clicking on "Refresh button" icon 342. Alternatively, an automatic refresh may be invoked wherein COMPWP 360 will automatically update to the extent permitted by the update capability of the underlying web pages, first web page 310 and second web page 320. "Composite Page" icon 350 and "Refresh button" icon 342 may be located in any number of GUI options such as icons or drop down menus.

Fig. 4 depicts alternate CWP 400 which has split screen canvas 410 and split screen work area 420. In order to assemble COMPWP 360, the user may invoke alternate CWP 400. The user can then display first web page 310 on the left hand side of the screen. The user would then perform the same operations on first web page 310 to create first information unit 322 as were described above. The user would then drag first information unit 322 from split screen work area 420 to split screen canvas 410.

Fig. 5 depicts CWP 400 with second web page 320 displayed in split screen work area 420.

In order to create a second information unit, the user would then invoke second web page 320 on the left side of alternate CWP 400 so that second web page 320 would be positioned on split screen work

area 420. The user would then perform the same operations on second web page 320 to create second information unit 328 as described above for first information unit 322. The user would then drag second information unit 328 from split screen work area 420 to split screen canvas 410. When second information unit 328 was properly positioned, and if no other information units were to be added, the user could invoke the "Composite Page" icon (not shown in Fig. 5) which could be accessed in any number of GUI manners such as an icon or a drop down menu. Refresh button 340 could be used to update first information unit 322 and second information unit 332. Alternatively, refresh button 340 could be used to invoke an automatic refresh function of COMPWP 360.

Figure 6, depicts a flow chart for the program for creating a composite web page such as COMPWP 360 in Figures 3C, 4 and 5. The user would invoke the program and the first step would be to invoke a CWP 604. Next, the program queries the user as to whether a IU was known 606. If the user had a desired IU, the program would cause the user to invoke the web page containing the desired information (608). Next, the user would define the IU by starting at an initial point and creating a continuous line around the desired information item until the line comes back to the initial point to completely enclose the information item (610). The user would then position the IU by dragging it into position on the CWP (612). Next, the user would determine whether the position of the IU was correct (614). If the position is not correct, the user would drag the information unit to adjust the position until the position was correct (616). If the position was correct, or if the position has been made correct by step 616, the program will determine whether the user desires to position another IU. If the user desires to position another IU, the program will determine whether or not the IU will come from the same web page as the previous IU or whether the IU will come from a new web page (620). If the IU is to come from the same web page as the previous web page, the program

will redisplay the existing web page to allow another selection (621) and then the user will define the IU (610). If the IU is to come from a new web page, the program will return to step 608 and the user will invoke the new web page. If the user does not want to add another IU, the program will save the composite web page and the process for forming the composite page will end.

Figure 7 depicts the process for selecting the mode of refreshing (updating) the information items in the composite web page. A composite web page such as COMPWP 360 in Figures 3C, 4 and 5 is invoked (704). Alternatively, process 700 may be initiated after step 622 of process 600. Refresh program 700 determines whether the automatic refresh has been turned on (706). If the automatic refresh has already been turned on, the program goes to step 722 and will automatically refresh. If the composite web page is not continuing to be displayed the program will end (726). If the automatic refresh is not on, the program will query the user as to whether or not the user wants to select the automatic refresh (708). If the user selects automatic refresh, the program will invoke the most recent available data from the underlying web sites (716). The program will then determine whether the composite web page has been displayed for a predetermined amount of time "x." If the composite web page has not been displayed for a predetermined amount of time "x," then the program will wait for a predetermined unit of time and then go to step 718 to again determine whether or not the composite web page has been displayed for predetermined amount of time "x." If the composite web page has been displayed for the predetermined amount of time "x" then the program will invoke the most recent available data from the underlying web sites. The program will determine whether or not composite web page continues to be displayed. If the composite web page does not continue to be displayed, then the program will end (726). If the composite web page continues to be displayed, then the program will go to step 718 and determine whether or not the

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composite web page has been displayed for pre-determined time "x".

At step 708, if the user does not select automatic refresh, then the program will determine whether or not the IU is current (710). If the IU is current the program will end (726) and wait for the next time the composite web page is invoked. If the IU is not current, the program will determine whether the user wants to manually refresh the IUs (712). If the user wants to manually refresh the IUs then, the user will invoke the refresh icon (714) and the program will invoke the most recent available data from the underlying web sites (714) and the program will then end (726) until the next time the composite web page is invoked. If the user does not want to manually refresh the IUs, the program will then end (726) until the next time the composite web page is invoked.

The advantages provided by the present invention should be apparent in light of the detailed description provided above. The description of the present invention has been presented for purposes of illustration and description, but is not limited to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiment was chosen and described in order to best explain the principles of the invention the practical application and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.